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EDITORIAL NOTES

SIGNPOST

THE announcements last week of the Government's decisions in regard to the establishment of a Central Planning Authority serves strongly to emphasize the need for the ordered assembly and clarification of Gas Industry views. All social services will have to fit into the pattern of the new schemes which will be formulated, in which confined parochial outlook will find no place. Briefly, with the Government moves as announced, statutory duties for town and country planning in England and Wales will be transferred from the Minister of Health to the Minister of Works and Buildings, whose title will be changed to Minister of Works and Planning; the Secretary for Scotland will continue his existing functions for planning in Scotland. The Government has expressed its belief that by this new procedure there can be welded into a single and consistent policy post-war reconstruction, including the provision of all necessary public services; and it has been set out that in particular the Government will "seek to ensure that fresh development is planned with due regard to the use which can be made of existing capital equipment and existing public services and will not wantonly countenance the break-up of old and valuable industrial concentrations."

There has been established, then, a central planning authority with very wide powers and responsibilities; planning is definitely a national policy, by no means a subsidiary activity. The effects of this will be felt by every public utility service, among them the Gas Industry; and we think it well to point to the significance to the Industry and to the individual undertakings comprising it of the broad plan envisaged, which is a powerful organization working on a system of partnership with local government administrations. This partnership idea has been expressed as local initiative and the elements of national planning applied to localities, *co-ordination of local plans fitting into a wider framework*, thus "encouraging further combinations of planning authorities over areas which demand planning as a unit" (Lord Reith, House of Lords, Feb. 11). The aim is to promote co-operation between authorities in planning over wide areas and in contact with the various interests affected. The Gas Industry is obviously one of the interests affected, and not the least important.

The essential powers in regard to planning are, then, to be concentrated into one Ministry, but central authority cannot function alone in the field of planning. In this respect a recent "informed" leader in *The Times*, published prior to the announcements of the Government's intentions made in both Houses of Parliament, appealed to us as having a direct and important bearing on what we have been saying about the success of any Gas Industry plan being dependent on the active work and real co-operation of the districts. The leader to which we have referred expressed the view that there must still be local planning and a local administration, but that the areas must be large enough to make them effective. Town and country planning, for example, are complementary and indivisible. We do not hesitate to quote the following, which we think is apposite: "The treatment of planning and physical reconstruction after the war will have to be contemplated on a regional rather than on a local scale. . . . It is desirable that the greater conception of the region, and everything that regional development makes possible, should supersede the narrower horizons of local politics. . . . The parochial and urban district view is too circumscribed for the requirements of efficiency in a number of public services." Here, we suggest, is not merely a pointer but an injunction for the Gas Industry, the future policy of which must essentially be shaped to accord in principle with this underlying current of thought and belief, which will undoubtedly be translated into action influencing the lives of every one of us.

DISTRICT VIEWS NEEDED

WE commented last week on certain of the steps which have been and are being taken by the Director-General of Gas Supply to smooth the path of reconstruction in the Gas Industry, to shake off the parochialism which has hampered its full development in the past, and to ensure a wide outlook and effective unity. The problems we have to face are many—some more insistent than others, some short term and some long term. A satisfactory solution to them is being eagerly sought, and it is becoming increasingly and abundantly clear that it is insufficient to leave their unravelling to any one central body. No central authority can be expected to make bricks without clay. There is a demand for views from the districts. These must be determined and clarified. District opinions must be expressed and with as little ambiguity as possible. We will not enter into lengthy enumeration of the more obvious problems which present themselves either for immediate action or for consideration in the light of post-war conditions. But we need to know reasonably precisely on what lines the districts are thinking and working. For this reason we suggest that, whatever the difficulties, more meetings of the District Gas Associations should be held to thresh out some of these matters *specifically* rather than to talk on general grounds and somewhat vaguely about "post-war problems." The District Associations ought to be in a position to state what they believe to be the best action to take in the interests of the Industry and the community, thereby giving wanted information and essential aid to central organizations. These discussions, we suggest, might well be divided into two parts—one on short term, the other on long term policy. Immediate needs—and this question includes Gas Industry research and those engaged in it—should be balanced against possible future requirements.

War circumstances have brought into more vivid relief both the strength and the weakness of the Gas Industry. It seems to us that broadly the Industry's strength, which it does not yet adequately appreciate, is that it can supply products, chiefly the two smokeless fuels, gas and coke, for which there is an enormous and a growing demand; and that its weaknesses lie in the methods which, taking the Gas Industry as a whole, have been adopted for satisfying this demand. The need since the war started for economizing in fuel used for domestic purposes in this country has brought home to the individual consumer how greatly dependent he is for his well-being on modern refined sources of heat. We think the public has become more "fuel conscious." There has been much in the air about post-war homes and the planning necessary for them; more and more attention is in fact being paid to this subject, which is of first-rate importance, and more and more does the part which fuel will possibly play enter into the picture. Lately we have enjoyed several most interesting talks on the question with people in no way connected with the Gas Industry, and we become increasingly impressed with the demand which exists for an abundant and economic supply of gas in all areas, not merely highly industrialized districts, throughout the country.

The problem confronting the Gas Industry is how it is going to satisfy this demand economically in a post-war economic structure which, it would appear, will be very different from that of pre-1940 days. Present conditions call for, and future circumstances will call for, more cohesion within the Industry and a readier acceptance of new and maybe revolutionary ideas. Opposition to a more widespread pooling of resources and to uniform policy will have to be swept away. The Industry must have unmistakable voice. To attain this the District Associations should be quite clear concerning their own points of view, and should unhesitatingly express their opinions for the common good. That some of the views may prove unacceptable and incapable of withstanding the light of broad and impartial scrutiny and analysis is beside the point.

STATISTICAL STARVATION

JUST a fortnight ago we were asking "Who knows what?" This not for the first time; in point of fact we have been asking the same question on and off for a number of years. It has long been evident that the Gas Industry was weak in statistics about itself, as well as about many extraneous matters which concerned its well-being. The Board of Trade Returns annually gave figures on certain extremely useful, but obvious, phases of the Industry's work, and presumably a considerable number of individual undertakings were in possession of much knowledge not only of their own affairs, but of conditions generally in their areas. The national bodies collected statistics each in its own sphere and for its own specific purposes, but it was nobody's particular business to collate the whole of this information and weld it intelligently into a usable whole, or even to record it in orderly manner so that it should form a central source on which to draw when necessary.

The necessity has now arisen. The Industry is face to face with a realization that a large measure of reorganization must be put through if it is to retain the position it has held for so long, and we are certain that had a bureau of statistics—by whatever name—been at work through the years it would be invaluable in the present difficult phase of wondering just where and how to begin. Such was the gist of our comment a fortnight ago, and we are pleased, without claiming either the prophetic gift or that it is in answer to any prayer of ours, to learn that something of the kind which we had in mind is likely to be provided for the use of the Gas Industry—and others who are interested in its future development.

We understand that an advisory committee is actually, or very nearly, in process of being formed under Board of Trade auspices to fill this gap in gas organization, which is considered to be a serious one. Its main function will be to advise upon and direct the activities of an economic bureau in the widest sense, with powers to collect statistics on financial, engineering, and any other matters which may be germane to the work in hand. More important to our mind since, as we have said, most of the facts have always been available in one shape or another, it will be the bureau's business not only to collate, but to digest the statistics, interpret their true significance, and serve them up in a form in which they can usefully be employed in the rebuilding process—indeed, serve very substantially as a basis for it.

The Committee, we gather, is likely to be staffed by the Board of Trade, and will not be in any way a Gas Industry institution. This will ensure a departure from the circumscribed field of vision which so many even in the Industry itself have long deplored, and the new outlook which the committee will have may well give us invaluable hints as to some of the things we do want to know about ourselves, as to which there still seems to be a considerable measure of doubt. All material will, needless to say, be at the disposal of the Directorate of Gas Supply which, we have little doubt, has very decided ideas as to its uses. Equally it will be available to the Post-War Planning Committee of the Gas Industry, and the Committee will do well to seize with both hands this gift which, by rights, should have been an inheritance from past generations of the great gas family.

THE "TIME-TALENT" FACTOR

FOR the last thirty years the Gas Industry has gained a great deal, at very little expense and at no inconvenience to itself, from research work at Leeds University. Looking back over the past twenty years or so, we think that the Industry as a whole has given its support rather grudgingly, has been impatient about this work, and has indulged in facile but not very constructive criticism, the while preening itself on one or two days annually on its "research mindedness." There has been far too much good-humoured tolerance of the work and far too little application of its results. We think that The Institution of Gas Engineers has been far too much concerned with the regular publication of quite unnecessarily voluminous reports, and that this attitude has had to an extent a deadening effect on the research workers themselves and those who have actively guided the research. There has been this spirit abroad: If the hen won't lay, slay it! Direction of the research and appreciation of its implications have been hazy; even to-day, in spite of the shaking-up of the present war, we think the atmosphere surrounding it is nebulous, and what we may term the "time-talent" factor not weighed with anything approaching accuracy. We realize that it is easy enough to criticize, and it has on more than one occasion occurred to us that the research workers at Leeds were prone to be easily contented, instead of, shall we say, making the Industry "sit up and take notice" a little more. But it seems to us that even now something is lacking in the liaison between the Gas Industry and Leeds University in regard to research, and that, in fact, the reshuffling and re-naming of research committees has not advanced matters very far. Somehow or other the tempo seems to be wrong; it appears to us to be set either too quick or not at all. We wonder, in brief, whether the "time-talent" factor is at all acutely assessed.

In spite of the doubts we have indicated and which we know full well are in being, the strength of the Fuel Department at Leeds University is undoubtedly waxing. This increasing strength is evident enough from the report of the Livesey Professor, Dr. Townend, for 1940–41. Wartime conditions have increased the demand for students to an extent which is far greater than can be met; they are, in fact, all placed in a "scarcity category." Not all of them, we think, will enter the Gas Industry, for the simple reason that the prospects in it are woefully ill-defined. We feel sure, however, that other industries will have the vision to see that their work is not wasted. Now we think there is something fundamentally wrong in that at this stage the Livesey Professor has to emphasize that apart from *ad hoc* grants in support of the special researches of the Joint Research Committee—we are speaking specifically of Gas Industry research—the Fuel Department has been without extra-mural assistance, and that funds available from University sources alone are quite inadequate to maintain the developments called for by normal scientific progress. There is obviously something amiss with a system of education designed to benefit a particular industry of national importance which cannot be sure of reasonable funds and which has to be constantly begging for financial support, just as there is something unsatisfactory and childish about regimented research which has to be periodically on parade—as, indeed, Leeds research has had to parade before the Gas Industry on the Institution parade ground. It is not to be wondered at that some of the parades have been noteworthy "flops."

In saying this, we should and must register relief that there has been practical response, if belated, to appeals by the Fuel Department for more substantial Gas Industry support. Dr. Townend records in his report that the Joint Standing Finance Committee of The Institution of Gas Engineers, the National Gas Council, and the British Commercial Gas Association has

agreed to furnish items listed as follows: Laboratory apparatus for which the need is great to ensure that practical instruction given to students is with the most up-to-date equipment; urgent requirements for established researches to avoid needless delays and improvisations; renewals of major equipment which has become obsolete and the provision of other essential equipment, *the need in the Department for which has hitherto never been met.* Our italics. As we have said, we register relief, but, after all, there is not a great deal in this on which a great national industry can preen itself. That Leeds University is not the only seat of learning and theatre of research is as obvious as it is beside the point. It is many years since the Gas Industry chose to establish a Chair there—or, rather, to assist in the establishment of a Chair—and we think it has done uncommonly well in the bargain. But we are left with the thought that it has not treated the bargain nearly seriously enough, just as we are left with the impression that in the wide field of research generally the Gas Industry of 1942 is not gaining what it could, and either does not know, or does not want to define what it wants. We are not alone in thinking that in certain directions there is lack of drive, with, as we have suggested before, too many heads in the air and too few feet on the ground.

Domestic Gas Water Heating

On later pages will be found a further contribution to the discussion on the future of gas for water heating for domestic purposes, which problem was critically examined by Mr. Leopold Friedman in an article we published in our issue of Dec. 3 last and which has already given rise to considerable comment. The present contribution is by Mr. Arthur Forshaw, whose step-by-step arguments will be followed with interest. We feel that we should refer to the final paragraph of his article, for in editorial comments introducing Mr. Friedman's contribution we endeavoured to make it clear that general criticism and discussion were invited—that the views put forward in it were, so to speak, there to be "shot at." We cannot think that "irrevocable steps" would be taken without due weight being given to the several factors involved in this wide and as yet hardly touched field for gas.

Personal

Mr. A. MITCHELL, Engineer and Manager of the Penicuik and District Gas Company, Ltd., has been appointed Engineer and Manager of the Buckie Gas Light Company, Ltd., in succession to the late H. G. Keillor. Mr. Mitchell served his apprenticeship at Dunfermline, where he became Technical Assistant before being appointed Assistant at Cowdenbeath.

* * *

Mr. F. DAWSON, Engineer & Manager of the Folkestone Gas & Coke Company, has been appointed to the position of Engineer and General Manager to the North Middlesex Gas Company in succession to Mr. J. H. Dyde. Prior to going to Folkestone at the beginning of 1941 Mr. Dawson was Engineer and Manager of the Herne Bay Gas Company, Ltd.

* * *

Mr. BERNARD CLARKE, Director, Engineer, Manager and Secretary of the Stamford Gaslight and Coke Company, has been appointed a Justice of the Peace for the Borough.

National Gas Council

A meeting of the Central Executive Board of the National Gas Council was held at Gas Industry House, No. 1, Grosvenor Place, S.W. 1 on Tuesday, Feb. 10, Sir David Milne-Watson, Bart., LL.D., D.L., in the Chair.

Before proceeding with the business of the meeting, it was agreed to send a message of sympathy to Mr. A. L. Jennings, who was unable to attend on account of illness.

The resignation of Mr. William Cash, a Vice-Chairman of the Board, was received with great regret. It was unanimously agreed that a letter should be sent to Mr. Cash, recording the Board's warm appreciation of the valuable work which he had done on behalf of the Gas Industry for so many years.

A report was received on the general coal position and a discussion took place with regard to the question of price and other matters. The Central Executive Board expressed great appreciation of the work of the Public Utilities Coal Committee which met Officials of the Mines Department week by week. It was agreed that a meeting of the Coal Committee of the Conjoint Conference of Public Utility Associations should be summoned at an early date.

It was reported that the Tenth Annual General Meeting of the Conjoint Conference of Public Utility Associations had been held on Jan. 28—see "JOURNAL" of Feb. 4, p. 165.

A report of the deputation from the Council of the Conference to the President of the Board of Trade, on Dec. 10, 1941, concerning gas charges, which had been circulated, was considered.

In view of the proposed legislation which the Government have undertaken to introduce with regard to War Damage and Public Utility Undertakings, a further deputation—this time from the National Gas Council—interviewed Officials of the Treasury and received a most sympathetic and judicial hearing. The views of the Treasury have not been indicated to the Council, but it is hoped that some opportunity will be given to the War Damage Committee of the Council to consider the nature of the proposed legislation before it is introduced into Parliament.

Mr. H. E. Bloor was appointed to serve as a representative of the National Gas Council on the Benzole Evaluation Committee of the National Benzole Company.

It was agreed that the Annual General Meeting of the Council should be postponed again this year in view of wartime conditions.

It was stated that the next meeting of the Board would be held on Tuesday, March 10, at 1.30 p.m.

Fuel Supplies to Industrial Consumers

In an announcement just issued, the Board of Trade directs the attention of industrial fuel consumers to the urgent need for avoiding conversions of plant from one fuel to another (*e.g.*, from oil to coal, &c.), except on the advice of one of the Government Departments mentioned below. Such changes, it is stated, often involve diversion of labour and materials from more vital needs and lead to unnecessary fuel supply difficulties.

If a change from one type of fuel to another, or the installation of new plant, is contemplated, the consumer should first consult the appropriate Government Department. In the case of a consumer executing contracts for one of the Production Ministries, this Ministry should be consulted and will in turn, when necessary, approach the Fuel Department of the Board of Trade responsible for the fuel to which the conversion is contemplated. A consumer not executing contracts for one of the Production Ministries should approach the appropriate Fuel Department of the Board of Trade direct. The Fuel Departments are as follows:

In the case of coal, the Mines Department through its Divisional Coal Officers.

In the case of liquid fuel (petroleum, creosote, and creosote/pitch mixture), the Petroleum Department, Millbank, S.W. 1.

In the case of gas, the Directorate of Gas Supply, Board of Trade, New Oxford House, Bloomsbury Way, W.C. 1.

In the case of electricity, the Electricity Commission through the local electricity supply undertaking.

The consumer will then be directed in the light of available fuel and plant supplies.

Special considerations apply for creosote/pitch mixture and pitch. To secure the maximum use of the country's production of creosote and pitch and at the same time a reduction in the use of imported fuel oil, it has for some time been the policy of the Government that consumers previously using fuel oil or creosote should, in suitable cases, turn over to creosote/pitch mixture. Many consumers have already made or are in process of making this change, and those in the latter position are asked to complete the work by the earliest possible date. Further conversions may become necessary, but they should not be undertaken except on the advice of the Petroleum Department.

In certain parts of the country there are still substantial quantities of pitch available, and any fuel consumers wishing to consider its use should approach the Mines Department, Coal Tar Control, Quebec House, Leeds, 1.

Copies of the following recently published British Standard 806—1942, "Ferrous Pipes and Piping Installations for and in connection with Land Boilers," may be obtained price 2s. each from the Secretary of The Institution of Gas Engineers, 1, Grosvenor Place, London, S.W. 1.

The Derby Gas Light and Coke Company have asked the Ashbourne Urban District Council to re-open negotiations with them with a view to the Council taking a bulk supply from the Company, or alternatively selling the Ashbourne Undertaking. Although the Gas Committee recommended that no action be taken, the Council have decided that it shall be considered.

Meetings of the London and Counties Coke Association have been arranged as follows for Monday, Feb. 23, at Gas Industry House: Finance Committee, 11 a.m.; Executive Committee, 11.30 a.m.; Central Committee, 1.30 p.m. There will be a buffet lunch at 12.45.

All Members of The Institution of Gas Engineers are invited to attend a Joint Meeting of the Coke Oven Managers' Association and the Institute of Fuel, to be held at the Royal Victoria Station Hotel, Sheffield, on Wednesday, Feb. 25, at 2.30 p.m., at which a Paper entitled "The Future of Coke" will be presented by Mr. J. G. Bennett (Director, British Coal Utilization Research Association) and discussed. Advance copies of the Paper may be obtained on application to the Secretary, the Institute of Fuel, 30, Bramham Gardens, London, S.W. 5.

WATER HEATING BY GAS—FURTHER CONSIDERATIONS

By ARTHUR FORSHAW, M.Sc.

DURING the considerable activity recently noticed on the hot water front one fact has been common to all those taking part—*viz.*, that each has been interested in one type of appliance only, and each has either made some attempt to show that his particular appliance was possessed of undoubted advantages over all others, or has merely applauded the remarks of the protagonists of that type. As Technical Adviser to Main Water Heaters, Ltd., the present writer is under no obligation to boost any particular type of heater. It had always been the policy of the parent R. & A. Main, Ltd., and it still remains that of the offspring, to provide heaters of types suitable for all the manifold and diverse uses for which hot water may be required.

Before going on to discuss the matter we should like to pay tribute to the tremendous effort that must have been expended on behalf of what, since before its serious introduction into this country it was met with from Brest to Bucharest and from Stockholm to Seville, may be truly called the continental type of instantaneous heater; an effort, as befits its subject, in the best traditions of continental thoroughness and application to detail. We refer, of course, to Mr. Leopold Friedman's article in the "GAS JOURNAL" for Dec. 3, 1941.

That article takes the form of an assembly of data in tabular form with arguments based on their consideration. Where the figures are extracted from official publications and in respect of their original purpose no exception can be taken to them; this origin and use does not, however, apply to all those quoted, and consequently the conclusions may not, on examination, prove to be entirely convincing. If these conclusions were to be accepted *nem. con.* and acted on by the Industry in respect of the large field of action admittedly open for hot water appliances, there might be considerable disappointment in the future should the actual results fail to confirm the expectations.

Let us now give some consideration to the points where general expectation due to propaganda is not completely justified by fact.

I well remember the effect produced by the initial booming of this type of instantaneous heater. The Gas Industry was impressed by the obvious fact that there was no *visible* condensation. Every technical man has longed for a gas free from condensation and free from sulphur—here, as by a miracle, was an appliance that appeared to behave as though the gas gave no water of condensation, with the expectation, therefore, that the sulphur acid corrosion bogy would be banished. This view no doubt still persists among the inexperienced, What are the facts? They are, of course, that the largest single constituent of town gas is hydrogen, either free or combined, and that its combustion provides water vapour which *must* condense to liquid on striking cold metal, and further that if oxides of sulphur are present, as they always are, the liquid is either actually or potentially corrosive. It is for this reason that the expression *visible* condensation has been made use of above. Every time this type instantaneous heater is lit up from cold there is condensation on the fins and colder parts. This does not come to sight, however, because it very rapidly dries as the metal warms up. In doing so it is clear that each spot of acid-containing moisture is concentrated and thus passes through a corrosive stage. However small, not to say infinitesimal, each spot may be its effect is quite definite and—many a mickle maks a muckle—eventually the gas throughway of the finned unit is interfered with by corrosion products, after which deterioration of the metal and of combustion is unbelievably rapid.

One reason will now be apparent why this type heater is unsuitable for use in situations where small quantities of hot water are required at intervals. The other or, shall we say another, is that a reasonably high initial efficiency is sadly reduced by the time cold dead water in connecting pipes has been replaced by hot and the hot contents of piping and machine allowed to cool down again.*

One may legitimately ask why, if this is the case, do Main Water Heaters make and sell a multipoint, and the reply is that it has undoubted uses for long-period draw-offs, such as baths or showers or in positions where, although each draw-off is short, there are sufficient in the aggregate to keep machine and piping warm or hot between whiles. This indicates that while we are criticizing the exclusive pushing of the multipoint for all domestic purposes, there is a distinct use for it if it is selected with discretion. This article is no place for boosting individual products, nor is such the writer's intention, but he can assert that the reduction of the corrosion alluded to and of its effects by experimental work on the spacing, size, material, and method of connexion of the fins and by the improvement of burners has had the constant and unremitting attention of our Research Department, whose work, moreover, has been sufficiently successful greatly to prolong the trouble-free period of use.

However, to continue, it would appear that this difficulty is proposed to be evaded by using two instantaneous heaters of the continental type; one a large one near the bath and the other a smaller one—the so-called "sink heater." This certainly tends to remove the *dead* length of piping, but it does not overcome the cooling in the heater itself, or, to put it another way, if the cooling in the intervening periods is to be avoided a sufficiently large by-pass flame must be provided; in either case high standby losses are inevitable.

There is another fact that has not been mentioned here as yet, and that is the capital expense involved to many undertakings if they are to provide adequate gas supply for a large scheme of multipoint installations, not only in mains but in meters, while housepiping also may very often be deficient in carrying capacity. It may be noted that the provision of separate instantaneous heaters at sink and bath rather accentuates this difficulty, since there must be sufficient volume of gas available to run both heaters simultaneously.

Reasons such as the above, which are by no means exhaustive, account for the preference for storage heaters of one sort or another in a large number of districts, while the criticism of undertakings, whether expressed or implied in the article, because their distributing systems will not allow of the mass installation of one particular form of heater, is unfortunate, first in that so far as it is based on figures for alternative gaseous heaters these do not appear to be representative of modern practice, and second, in that other alternative types are completely ignored. The first of the above points need not be laboured here; it suffices to indicate that lagging seems to have been conspicuous by its absence, while the system on the performance of which the figures were based was obviously ill-suited to give average, let alone favourable, figures for the type.

There are at least two types of circulating storage heaters of which no mention is made—*viz.*, the small finned unit for attachment to existing storage systems either as auxiliary or as principal, and the so-called builders' sets made up of a separate heater, either of the heavy cast-iron type or of the later finned unit type, attached as advantageously as possible to its own storage cylinder, which cuts out the existing one if such is already in the house. An extension of the last type consists of a self-contained heater and storage with a considerably higher capacity and gas rate.

In addition to these there are the entirely self-contained storage heaters, in sheet metal or the like modern material, with a capacity of from 2 to about 14/20 gallons for installation at the sink or in the bathroom. This type is, of course, not connected to any existing house circulating system, and thus incurs none of the heat losses so occasioned.

Until the performance of all these has been minutely enquired into in regard to first cost, installation cost, running cost, and maintenance charges, without mentioning considerations of convenience in clothes airing and the like, it is to say the least of it somewhat invidious to make the following statement—*viz.*, "Small house requirements for families of limited income represent 90% of the domestic water heating market. . . . Limited hot water storage is neither economical nor satisfactory. . . . The correct application of gas for domestic water heating is by . . . suitable appliances of the instantaneous or continuous flow type."

It will be appreciated that the above comments on the previous articles, from the "Conclusions" of one of which the above quotation is taken, have so far been more particularly based on what may be called their sins of omission. Without unduly lengthening these comments it is felt that they should be balanced by some allusion, if not a complete one, to their sins of commission. For this mention the figures for maintenance given by Mr. Leopold Friedman in his Table VI are taken, and it may well be asked whether any gas undertaking with the requisite experience spread over numbers and time would be prepared to confirm that the annual charges under this head and including replacements are (1) equal for a multipoint heater and a circulator and further, (2) are only 10s. per annum for the multipoint.

This particular charge is selected because on it depends a large part of the argument in favour of the multipoint, while from consideration of the general maintenance figures put forward it is clear that they are round figures without any particular quoted authentication. Their suitability for inclusion in building up a case for the exclusive use by the whole of the Gas Industry of one particular form of water heating appliance at the expense of all others is therefore unproven and, lest even this suggestion might be thought too severe, the present writer would remind those interested that in one year alone, as he pointed out in a letter published by the "GAS JOURNAL" on May 1, 1940, large numbers of multipoints, not of our make, were frozen solid and severely damaged to the extent of four or five times the annual maintenance and repair charges quoted above.

In pursuit of the object of recommending the continental instantaneous heater to the exclusion of all other types, the article of Dec. 3 naturally exhibits on occasion a curious point of view. Thus taking

* Naturally the hotter the water required the greater the loss sustained in this way, and in this connexion it should be noted that the most usual short-interval intermittent use for hot water is for washing-up, which also requires the hottest water of any—for the satisfactory removal of fat, about 150°F. at the outlet.

the multipoint at £18 10s. and the circulator at £6 (first cost), it classes the former as a necessity, and the latter as a luxury type of water heater, entirely on an assumed cost of running to produce an arbitrarily selected quantity of water daily for ten years and on an unproven cost of repairs during that period? Apart from the question of the suitability of the particular circulator and system for the part of sustaining the comparison, which has been dealt with elsewhere, this method of comparison ignores human nature; for having spent a considerable sum on installing an appliance guaranteed to give "unlimited" hot water at the turn of a tap and having been assured, quite rightly, that such water is provided at a reasonably high thermal efficiency, the consumer naturally makes use of it. Who is doing to measure out for him, or more usually her, those daily gallons or compute those daily therms which make up the decennial quantities shown in Tables VII and IX? Thus when the gas account, which inexorably makes these measurements and computations, comes in, the obligations far outdistance the expectations and, as some of those interested could no doubt confirm, either the appliance is forthwith thrown out or another consumer is left "paying for the right to use gas without making full use of it."

No *post factum* arguments are going to sweeten such a consumer and make him "an unpaid advocate" for gas. No! a very persuasive official indeed would be needed to "put it over" on such a consumer that the multipoint with a possible usage of just over one therm of gas per *hour* was not a "luxury" but a "necessity."

This particular point is one of the best arguments in favour of a selected storage heater of the self-contained type, for do what she will the consumer cannot exceed a predeterminable maximum well within the possibilities of her pocket, so much so indeed that an overall charge could be quoted to cover hot water service from such appliances, or at any rate to give the prospective user a firm and unexceedable maximum cost in gas for the service.

That this argument also favours certain other heating media and ignores the one great advantage gas has over all others—*viz.*, its potential high output of hot water in a short time—is clearly because for the large numbers of people in the lower income classes quoted, instantaneous hot water is a luxury from which they must be protected. It is futile, in our opinion, to rely on figures and at the same time to ignore human nature—"you can't get more out of a pint pot than a pint," and if we advise consumers who can afford only a limited expenditure not to adopt an "unlimited" appliance, the risks that they will "drown" themselves financially and will simultaneously "liquidate" the chances of gas will be forestalled. "The coat must be cut according to the cloth," and it is fortunate that so large and various a choice of gas-heated water appliances enables all possible conditions to be met by one or other of them without forcing the user to look towards any other heating medium.

Bearing on this matter we have a number of notes which present considerations of time and space do not allow to be developed. Short mention of them will, however, enable those interested to take them into consideration when comparing the merits of the various appliances available, before deciding what may be most suitable for their own districts.

For instance the effect of—

Regulations of the local water authority.
Significant variations in water pressure.
Water quality (hardness, corrosiveness, &c.).
Two-part tariffs on—
(1) By-pass and maintenance consumptions.
(2) Encouragement of fuller use and thus the promotion of higher thermal and practical efficiency.
Use of water partly heated in a high efficiency heater and finished off in a kettle where high temperatures are required.
The effect of the local gas from the points of view of pressure variations, sulphur content, and the like.

These are, of course, in addition to those dealt with or implied in the text, for instance:

Influence of present distribution layout on the type of heater recommended or, alternatively—
Effect on the layout of large installations of various types of heater.
Statistics *v.* human nature.
Weighty conclusions drawn from poorly authenticated figures.

No doubt further points will suggest themselves as the matter is gone into.

In conclusion one may repeat that when the Gas Industry is invited to give a "plumper" for any one particular appliance on evidence, however plausible, put forward by the makers of that appliance only, caution suggests that if alternative appliances exist their merits and performance should be studied in the same detail before an irrevocable step is taken.

INSTITUTION OF GAS ENGINEERS

[Abstract of Communication No. 242]

The following is an abstract of the 2nd Report of the Chairmen's Technical Committee, 1940–41.

The membership of the Chairmen's Technical Committee is:

George Dixon (*Chairman*), E. V. Evans, O.B.E. (*Vice-Chairman*), F. M. Birks, O.B.E., Charles F. Botley, H. J. Escreet, Stephen Lacey, T. F. E. Rhead, Col. H. C. Smith, John Terrace, the President, the two Vice-Presidents and the Hon. Secretary of the Institution (*ex officio*).

It is regretted that owing to the continuing state of war the normal work of the Technical Committees of the Institution and the corresponding co-ordinating functions of the Chairmen's Technical Committee have had to be curtailed. The Institution has, however, continued to collaborate actively with Government Departments, and its Technical Committees have been called into consultation on many occasions in furtherance of the war effort. Much useful work has thus been done by these Committees, most of which has found expression in the form of confidential memoranda which have been circulated to gas undertakings. In consequence, separate reports of the work of the Committees have not been published.

The Institution has continued to co-operate with the Parliamentary and Scientific Committee and with the Joint Committee on Materials and their Testing. The technical discussions organized by the latter Committee have been postponed for the time being. The Institution continues, through the Gas Industry Committee, Technical Committees, and otherwise, to co-operate with the British Standards Institution in the preparation of British Standard Specifications.

The membership of the Domestic Heating Committee is: Stephen Lacey (*Chairman*), J. E. Davis, Harold Hartley, F. O. Hawes, C. A. Masterman, E. W. Smith, C.B.E., the President, the two Vice-Presidents, and the Hon. Secretary of the Institution (*ex officio*).

Society of British Gas Industries nominees: H. Angus, T. F. C. Potterton.

Owing to the war, the investigation work formerly undertaken by the Committee has had to be suspended, but matters relating to recent and future developments in domestic heating and factors relating to comfort conditions have continued to be reviewed. The Committee has been particularly concerned with a review of the present and possible future development of district heating, and has submitted a memorandum on the subject to the Chairmen's Technical Committee. The Committee has under consideration matters concerning domestic heating and ventilation in relation to post-war planning.

The membership of the Gas-Works Safety Rules Committee is: F. M. Birks, O.B.E. (*Chairman*), H. E. Bloor, J. M. Campbell, Thomas Carmichael, J. E. Davis, Thomas Hardie, L. Hartley, H. Hollings, James Jamieson, J. W. Napier, M.B.E., George C. Pearson, T. F. E. Rhead, C. S. Shapley, Col. H. C. Smith, E. G. Stewart, the President, the two Vice-Presidents, and the Hon. Secretary of the Institution (*ex officio*). *Co-opted:* L. F. Stemp.

The Committee has met regularly during the year, but it is not possible to give detailed information of its activities.

The continued demand for Gasholder Record Sheets shows that their usefulness is appreciated by the Industry.

The membership of the Joint Lighting Committee is:

Institution Nominees: George Dixon (*Chairman*), A. Maurice Bell, W. J. A. Butterfield, W. J. G. Davey, J. E. Davis, E. V. Evans, O.B.E., J. Weatherall Foreman, A. G. Higgins, A. L. Holton, James Jamieson, Stephen Lacey, A. R. McGibbon, C. A. Masterman, F. C. Smith, C. I. Winstone.

Society of British Gas Industries Nominees: W. R. Edgar, Col. C. J. Falk, F. J. Gould, J. H. G. Horstmann, C. H. A. Kempton, R. J. Rogers, H. R. Stevenson, Philip H. Sugg.

Affiliated District Gas Associations' Nominees: James Dickson (North British), E. M. Edwards (Wales and Monmouthshire), E. Howard (Midland), H. W. Saville (Irish), H. Singleton (Manchester), W. S. Stredwick (Southern), J. E. White (North of England), George Wright (Eastern Counties).

Ex officio: The President, the two Vice-Presidents, and the Hon. Secretary of the Institution.

The Joint Lighting Committee has co-operated with the Factory Department of the Ministry of Labour and National Service concerning the standards of lighting in factories. The recommendations of the Fifth Report on Lighting in Factories have been implemented by the issue of Statutory Rules and Orders, 1941, No. 94, which refers to factories in which persons are regularly employed for more than 48 hours per week.

There has been no change in the regulations relating to wartime street lighting. Gas street-lighting fittings complying with B.S. ARP/37, referred to in "Wartime Street Lighting by Gas" (*Publication No.* 225), are being used for modified street-lighting installations throughout the country. Following experience gained with these lighting installations the Ministry of Home Security, after consultation with the Committee, approved a special scheme for the lighting of gas-works, particulars of which were circulated to the Industry.

The membership of the Liquor Effluents and Ammonia Committee is: Charles F. Botley (*Chairman*), T. Lewis Bailey, H. T. Calvert, M.B.E., W. A. Damon, E. V. Evans, O.B.E., H. Hollings, P. N. Langford, P. G. G. Moon, A. Parker, P. Parrish, E. W. Smith, C.B.E.,

J. Wilkinson, O.B.E., Prof. J. W. Cobb, C.B.E. (*Hon. Secretary*), the President, the two Vice-Presidents and the Hon. Secretary of the Institution (*ex officio*). *Co-opted:* L. F. Stemp.

The Committee has continued to give advice regarding the discharge of effluent from gas undertakings and the application thereto of the Public Health (Drainage of Trade Premises) Act, 1937. The Committee has also been consulted in respect of an alleged case of pollution of a water supply by drainage from a gas undertaking. The services of Dr. A. Key (Research Chemist) were enlisted in this case.

It was recorded in last year's Report that the Committee had recommended to the Council of the Institution that a full-scale trial be made of Dr. Key's process for the production of ammonium bicarbonate. It was hoped that financial assistance in carrying out this trial would have been obtained from the Ministry concerned, but this has not been forthcoming. In order to increase the recovery of ammonia in the national interest, the Controller of Industrial Ammonia, in pursuance of his powers under Defence Regulations, is providing a number of concentrated liquor plants to be operated at gas undertakings where recovery of ammonia is not being practised. The Committee made representations to the Controller regarding certain technical points in the draft form of contract for the operation of these plants.

The membership of the Meters Committee is: John Terrace (*Chairman*), H. E. Bennet, M.C., R. J. H. Clark, C. M. Croft, H. W. Hodgson, Stephen Lacey, L. F. McLeod, O.B.E., J. W. McLusky, R. G. Marsh, C. A. Masterman, C. S. Shapley, the President, the two Vice-Presidents and the Hon. Secretary of the Institution (*ex officio*).

The membership of the Pipes Committee is: H. J. Escreet (*Chairman*), F. Boardman, L. F. McLeod, O.B.E., R. G. Marsh, S. T. S. Musgrove, the President, the two Vice-Presidents and the Hon. Secretary of the Institution (*ex officio*).

Although the Committee has not met during the year, certain matters have been dealt with by correspondence, and confidential information relating to air raid damage and air raid precautions has been circulated to the Industry.

The separately published Institution Gas Research Fellowship Report, 1939–40 (*Communication No.* 244), by J. S. Forsyth (Institution Gas Research Fellow), D. G. R. Davies (Corbet Woodall Scholar) and D. T. A. Townend (Livesey Professor) is concerned with aerated burner flames. The Report covers the period to the end of the year 1940 and is divided into two parts, the first dealing with the measurement of ignition velocity and the second with the character of the inner cone in relation to "light-back."

The Institution Gas Research Fellowship Interim Report, 1941 (*Communication No.* 245), by J. E. Garside, Ph.D. (Institution Gas Research Fellow), A. R. Hall, M.Sc. (Smithells Scholar) and D. T. A. Townend, D.Sc., Ph.D., D.I.C. (Livesey Professor), dealing with the stability of aerated burner flames, has also been published separately.

The publication of the 3rd Arthur Duckham Research Fellowship Report has been temporarily deferred. The investigation by the Second Arthur Duckham Research Fellow (E. C. W. Smith) of luminescence phenomena has been actively pursued and has brought to light the dependence of the luminescence emitted when gas flames impinge upon certain solid substances on the presence in the parent materials (host lattices) of a small quantity of some other compound, a so-called "activator." A number of materials have been examined, and it has been found that for the maximum production of luminescence an optimum concentration of the activator is required in each case.

The nature of the light emitted has been examined spectrographically. In all cases so far examined, the luminescent radiation ceases to be emitted when the surface of the solid is heated to incipient redness, but no confirmation has been found of earlier claims that in certain cases the normal thermal radiation of incandescent solids is supplemented by luminescent radiation. On the other hand, the behaviour of such substances when heated to incandescence in a flame shows certain abnormalities which can only be explained by (*a*) an abrupt change in their thermal conductivity, or (*b*) an abrupt change in their infra-red emissivity, or (*c*) some catalytic influence of the surface on the mechanism of combustion in the flame. It is thought that the elucidation of these latter phenomena may be of some importance in the consideration of the design of gas-heated furnaces, and the like.

A further potential application of this work relates to the use of infra-red radiation in industrial drying processes.

THE GAS INDUSTRY POST-WAR*

By H. N. DANN, *Blackburn*

I COMMENCE with a quotation, which I have modified only in respect of the subject, taken from a recent issue of the *Economist:*

"To begin a discussion, at this juncture, on the reorganization to be conducted within the Gas Industry after the war has been won might seem, at first sight, to be an outstanding example of stopping to count unhatched chickens while the hen roost is burning. In fact, however, this is, of all the problems of post-war reconstruction, the one on which it is most important for the personnel of the Gas Industry to begin to clarify their minds. The urgency arises not merely from the necessity of preparing our plans well ahead, but also because the Industry lags far behind, by its lack of national organization."

Tables I and II give a basis from which to consider the structure of the Industry as it stood when war put a stop to further activity in regard to the transfer of undertakings. The undertakings used for this analysis are those of England, Scotland, and Wales, and the three main divisions of ownership, with the percentage of gas made and bought, are shown in Table I.

The Structure of the Gas Industry Based on an Analysis of its Constituent Undertakings

TABLE I.

Ownership Group.	Number of undertakings.	% of total.	Gas made and bought (millions of cu.ft.)	% of total.
Companies	541	47.5	200,000	56.6
Public Authority	294	25.8	117,500	33.3
Holding Companies	304	26.7	35,500	10.1
Total	1,139	...	353,000	...

TABLE II.

Production per annum (millions of cu.ft.)	Company owned undertakings %	Public authority owned undertakings %	Holding company owned undertakings %	The Industry %	
Up to 5	18.1	3.4	8.6	11.8	
5 „ 10	12.2	4.7	15.9	11.1	
10 „ 20	19.2	6.4	18.2	15.6	57.3
20 „ 50	20.7	15.6	18.4	18.8	
50 „ 100	8.7	18.7	13.3	12.5	
100 „ 500	13.1	36.0	18.5	20.6	33.1
500 „ 1000	2.9	7.1	4.8	4.5	
Over 1000	5.1	8.1	2.3	5.1	9.6

The company-owned undertakings still remain the largest proportion both in respect of numbers and of output. The figures relating to local authorities are interesting in that, while only a quarter of the total undertakings, they produce a third of the gas made. We can argue that the ownership of public utilities led to an increasing consciousness in the minds of the ratepayers of the value of gas as a source of heat, light, and power, or we can analyze the nature of the constituent undertakings, and discover that the large centres of population and industry are in the main supplied with gas by the local authority. The third group, the holding company undertakings, while they represent some 27% of the total undertakings, only produce some 10% of the total gas.

In order to clarify the position still further consideration should now be given to Table II. In this analysis, the division of undertakings into eight groups according to size is made, and in column 5 the analysis covers the total of undertakings considered in Table I.

Consider column 5; the total of undertakings making up to 50 million cu.ft. per annum is seen to be 57.3%. A second group of undertakings, some 33.1%, make from 50–500 million cu.ft. per annum. A small percentage, 9.6% in all, make quantities from 500–1,000 millions and over 1,000 million cu.ft. per annum, and finally some 5.1%—that is those undertakings of over 1,000 millions—make some 68% of the total gas.

It is abundantly clear that the Industry as a whole is one of small and medium sized units, and it is with such a structure that the Industry will have to face a completely changed world after the war.

In as far as the holding company movement has developed, it is clear that its constituent undertakings are of the small type; some 61.1% of the total make up to a maximum of 50 million cu.ft. per annum. What does this analysis and the information revealed portend?

The present position is of a nation-wide Industry composed of some 1,139 units, some 304 of them controlled by 18 central financial and administrative bodies.

Of the national organizations set up from time to time to provide machinery for this promotion of the interests of the Industry as a whole, mention is made of three.

The British Commercial Gas Association has a membership of 850. Its activities cover national advertising, the provision of suitable propaganda, and a multitude of activities available to its members at a price.

The declared aims of the National Gas Council are "To promote and defend the interests of the Gas Industry. To watch over and take any steps which may seem desirable with reference to any legislative measures or proposals for legislative measures, which may affect or tend to, or be likely to, affect, the interests of the Industry, and to give members of the Council all such assistance as to the Central Executive Board shall appear desirable."

The Institution has as its objects, "The promotion of Engineering

* From a Paper to the Manchester and District Junior Gas Association, Jan. 31.

and Science as applied to the Gas Industry in all or any of its branches, &c."

In general all the organizations are permissive in character. Their utterances may carry conviction, but not authority, and it is for this reason that the Gas Industry still presents a far from unified picture of its chief commodity. The avowed objects of uniform quality, removal of organic sulphur, &c., are not achieved. The financial stability of the component elements varies greatly in relation to capacity to progress, and to take new alignments of population and industry and profit by them. It is a discordant picture that presents itself.

In pre-war years the internal history of the country centres round the depressed areas, for industry had shown a gradual concentration within what has been termed the "Quadrant," an area roughly outlined by joining the following five cities and towns: Manchester, Leeds, London, Southampton, and Bristol.

Government had done little or nothing to reverse this movement, although the re-armament programme did produce some dispersal of industry in the immediate pre-war years. It seems profitable to examine the position of undertakings lying within and near to the boundaries of the Quadrant at three periods. It must be understood that the so-called boundaries are not distinct boundaries in any true sense.

The three dates chosen are 1927, 1934, and 1940. A sample of the undertakings, some 100 in all, was taken from the area roughly prescribed by the Quadrant, and the results are tabulated below.

TABLE III.

Undertakings showing	Item.	%
Undertakings showing	increases in the period 1927–34	77
,, ,,	decreases ,, ,, 1927–34	23
,, ,,	increases ,, ,, 1934–40	80
,, ,,	decreases ,, ,, 1934–40	20
,, ,,	increases throughout 1927–40	68
,, ,,	decreases ,, ,, 1927–40	9
,, ,,	increases from 1927–34, then decreases 1934–40	9
,, ,,	decreases from 1927–34, then increases 1934–40	11

It is significant that the 9% showing a continuous decrease lie outside the boundaries of the Quadrant, and geographically are situated either west or north of the imaginary boundaries. The most massive increases are to be found in the Midlands and the South-East. In view of the findings of the Royal Commission on Industrial Populations and the results of the concentrations of both industry and people —that is, the merging of municipal boundaries, the rapid development of housing, with all the concomitant services, the immediate effects of war upon the siting of industry, and the movements of population following industrial dispersion and evacuation—the Gas Industry in these days of war has had to face up to new and sometimes unexpected situations. The depressed areas have been granted a renewal of life, but the position after the war will be one of flux and change. What then is to be the position of the Industry in the days immediately following the cessation of hostilities, in the ensuing, and, as we hope, long continuing, days of peace? What is to be the short term policy of the Industry, and what the long term policy?

The Gas Industry has never been in competition within itself, owing to the nature of the statutes governing it. In recent years competition has developed from the electrical and oil interests. In order to retain old and capture new business, particularly after such a war as that in which we are now involved, when the condition of the world will be reflected in all countries, and economic paralysis in one continent will react immediately in all others, the necessity for reorganization and planning would seem self evident. The question then arises as to which school of thought we are to support, which lends itself best to our interests—that is, the interests of the Gas Industry as a whole.

We as an Industry must fit ourselves into any scheme of national planning, as well as into local schemes, which latter schemes, though perhaps subject to certain overriding decisions of a central authority, must yet retain sufficient freedom to meet local conditions. The Gas Industry must therefore see itself as part of any new schemes of town planning, industrial siting, and so on.

How can we commence to study the problem? The problem would appear to resolve itself as follows: In order effectively to meet the competition of the other fuel interests, should the Gas Industry become subject to central planning, or can it achieve the necessary resolution of its difficulties and still retain its present autonomous structure? (A Ministry of Fuel to co-ordinate the services of all the fuel interests, solid, liquid, gaseous, with electricity, if it comes, will almost certainly result in a centrally planned scheme.) Over and above this is the question, by what form of control can the Industry best serve the nation?

The needs of war have led to interesting developments in gas policy from the Government angle, in the appointment of a Director-General of Gas Supply. The Industry touches the life of the people and the life of industry at very many points and the need for the appointment seems to have been recognized throughout the country. If by it we can hope to see realized the better co-ordination in wartime of the vital heat, light, and power services which both people and industry demand, if we see realized a better relationship between raw materials producers and the Industry, the individuals supplying our needs and the demands made upon us, then our lot in wartime will be eased and co-operation made more sympathetic and efficient. But can we look to this official for further help in enabling the difficult post-war years to be safely bridged? Only, I believe, if the Industry as a whole can put forward a settled policy for its long term service, coupled with interim proposals to make the immediate post-war years ones of effort in the desired direction.

Government policy is now in the hands of a Minister without Portfolio, who is charged with the responsibility of reporting on post-war reconstruction, with special reference to economic reconstruction. What will come out of this we have as yet no means of knowing, but the free use of capital will, of course, be restricted, so that any large plans will of necessity have to be held over. But there are some ways in which the Industry can prepare itself for the introduction of long-term planning. In the forefront I would place the unification of calorific value.

What is to be the criterion? Is it to be that quality most favoured by the large industrial users, or shall it be declaration by specific geographical region? These points must be determined in relation to the long-term policy for the Industry. The all-important sulphur question must, in my view, wait upon the development and realization of long-term policy. How can a nation-wide service, which shall everywhere carry the same "hall marks" of perfection, be produced and purveyed by such an agglomeration as the Gas Industry of to-day? The unification of quality can be discussed, agreed, and embodied in legislation within a short time after the war, but sulphur removal involves the small undertaker in a process which he may be unable to carry out, either from economic or from technical considerations.

The setting up of a committee to consider the standardization of appliances follows as a natural corollary to that of setting up a committee to consider the unification of calorific value. Its findings can be materially assisted by the conclusions of the first committee, but it is vital to the Industry that when the appliance makers are allowed to develop in an atmosphere of freedom once again, they should do so with the clear knowledge of the demands to be laid upon them.

What will be the effect of quality unification upon price? Will this point raise insuperable obstacles to a general agreement upon this point? If any uniformity could be obtained on pricing of gas and of appliances, surely publicity and propaganda of a nation-wide character would be more effective. Lastly, what has the Industry to offer to newcomers? In the years immediately following the cessation of hostilities and before new orientations of industry and commerce can take effective shape, is the incentive held out by the Industry sufficient to draw to it a fair proportion of genius and intelligence? An Industry of such variegated type cannot induce keen competition for its places unless and until reorganization from within has put before the aspirant a clear view of the likely profits of his skill.

Can holding companies achieve the unification desirable if the Industry as a whole is to obtain the degree of rationalization necessary? I am inclined to the view that this would not be in the best interests of the Industry, since any broad scheme must take into consideration the possibility of a Ministry of Fuel being set up which would co-ordinate the light, heat, and power services of the country as a whole.

If we are seeking to rationalize our own Industry, how far can we look to the coke oven industry to aid by supplies in bulk?

From the P.E.P. report on the Gas Industry, published in 1939, I take the following:

TABLE IV.—Distribution of Coke Oven Gas, 1937.

Item.	Millions of cu.ft.	%
Gas produced	234,302	100.0
Gas used at ovens:		
1. For heating ovens	129,433	79.0
2. For other purposes	56,484	
Gas sold:		
1. To gas undertakings	27,485	12.0
2. Other undertakings	8,935	4.0
Gas unaccounted for	11,965	5.0

The Gas Industry, while it can harness considerable quantities of hitherto surplus and wasted gas, must look elsewhere for its main production.

We are brought back to the question of a Ministry of Fuel. The Director-General of Gas Supply has envisaged "Gas Commissioners," and this implies the reorganization of the Gas Industry on lines based on the experience of the Electricity Grid—at least that is one interpretation of the statement. We see the development of large centralized, strategically placed producing units, taking into account surplus coke oven gas, and distributing its gas through a network of high-pressure mains, themselves linked as between the producing centres.

The condition of many plants after this war will be such that a spate of rebuilding will most certainly follow as soon as supplies of capital are available, and therefore such physical linkage as is possible, or has been carried out during the war, should be made a part of the immediate post-war policy. Restriction on the free use of capital will be necessary in order that post-war planning can be introduced without being impeded by fresh commitments.

Close contact with the planning authorities must be maintained, so that due emphasis is at all times given to gas as a service, and its proper place in all schemes for future development of housing and industrial sites is constantly before the authorities concerned.

Munitions Factory in the North-West

The accompanying photograph shows part of the kitchen in a munitions factory in the North-West, recently equipped by Radiation Ltd. The central hotplate, roasting ovens, fish fryer, and griller are gas heated, while the bain marie, steamers, boiling pans, hotclosets, and tea boilers are heated by steam.

In addition to the cooking apparatus summarized above, Radiation Ltd. provided all the subsidiary kitchen equipment, such as tabling, shelving, cupboards, sinks, draining boards, vegetable storage bins, as well as labour-saving devices, such as dish washing machine, mixing machine, refrigerator, potato peeler, and potato chipper.

The kitchen is catering for 800.

Valve Operating Gear for Gasholders

We have received from Mr. M. Crausaz, of "Ankerdene," Albert Road, Tamworth, particulars of a valve operating gear for gasholders which he has designed and which is now in operation at the Fazeley Works of the Tamworth Gaslight & Coke Company. He informs us that the objects he has tried to achieve are:

(1) The automatic control of the gas inlet to any type of water sealed gasholder.

(2) To make use of the gasholder's full capacity when peak loads are required for the town supply.

(3) To keep the gasholder exercised regularly without supervision.

(4) To prevent corrosion and a "wind and water" line forming on any one particular part of the gasholder.

(5) To make sure that the cups of each lift of a gasholder are "dipped" regularly.

This valve operating gear is intended for holders in outlying districts, situated apart from the works, or where a works has been closed down for manufacture and the holders are used as a distributing depot, the gas being supplied from a main works.

The makers of the gear are Messrs. W. H. Dunn & Sons, Ltd., Heath Street Works, Tamworth.

Synthesis of Toluene

The Gas Light & Coke Company, R. H. Griffith and M. Maccormac have been granted a patent (No. 541,534; application date, May 28, 1940) regarding a process for the synthesis of toluene. It comprises bringing a mixture of benzene and methyl alcohol into contact with a catalyst at elevated temperature and at super-atmospheric pressure, the catalyst consisting of or containing a phosphoric acid or a metal phosphate.

The mixture of benzene and methyl alcohol may be brought into contact with the catalyst at a temperature from 250° C. to 600°C. and the pressure is preferably of the order of 100 atmospheres or higher —*e.g.*, up to 300 atmospheres. By working under a high pressure of this order secondary reactions leading to loss of methanol are greatly inhibited.

It has been found preferable to carry out the process of the invention with an excess of benzene so that the formation of ethylene, dimethyl ether, or xylene is reduced to a minimum. The amount of benzene present during the reaction with methyl alcohol is preferably about four times that theoretically necessary for the reaction.

The catalyst may consist of or contain an orthophosphate, metaphosphate, pyrophosphate or acid phosphate of a metal, and in these cases it may be used without a support. The catalyst may, however, be carried on a support which is inert towards the catalyst and the support may consist of coke, charcoal, or similar carbonaceous material. The carrier may alternatively consist of a phosphoric acid mounted upon a siliceous carrier. Such reaction may be used to form a granular catalyst mass by binding together finely divided catalyst and carrier.

Following is a description of methods of carrying the process into effect.

EXAMPLE I.—Benzene mixed with 16% by volume (in the liquid state) of methanol was passed over a catalyst, prepared by soaking broken coke in orthophosphoric acid at a space velocity of 2 volumes of liquid per hour per volume of catalyst, under a pressure of 175 atmospheres and at a temperature of 480°C.

The condensed liquid product obtained consisted of water and a mixture of hydrocarbons. 14% by volume of the hydrocarbons was found to be toluene and a smaller proportion was xylene.

EXAMPLE II.—Benzene mixed with 12% by volume of methanol was passed over a catalyst prepared by dissolving magnesium carbonate in ortho-phosphoric acid in the proportion of 1 molecule of carbonate to 2 molecules of acid, evaporating to dryness, and heating to 400°. The catalyst was used in granular form at 440°C. under a pressure of 200 atmospheres, 4 volumes of liquid being passed per hour over 1 volume of catalyst space. In the liquid hydrocarbon product obtained, 15% of toluene was present.

EXAMPLE III.—A granular catalyst was prepared by impregnating kieselguhr with orthophosphoric acid and heating the material to a dull redness. A mixture of benzene and methanol similar to that described in Example II was passed over the catalyst at a rate of 2 volumes per hour per volume of catalyst space, at 350°C. under a pressure of 200 atmospheres. The hydrocarbon product contained 16% of toluene.

In prior British Specification No. 464,752 there is disclosed a process for the alkylation of an aromatic compound by olefinic hydrocarbon in the presence of a solid catalyst prepared by calcining a mixture of a phosphoric acid and a finely divided solid adsorbent. The olefinic hydrocarbon and the aromatic compound may be brought into contact in the gaseous phase or a mixture of the aromatic compound and a compound yielding an olefinic hydrocarbon on dehydration—*e.g.*, an alcohol—may be brought into contact with the catalyst.

In contradistinction to the process disclosed in Specification No. 464,752 the present invention employs methyl alcohol, an alcohol which does not yield the corresponding olefinic hydrocarbon on dehydration, as no such substance can exist.

COMPANY MEETING

Wandsworth and District Gas Company

The annual meeting of the Wandsworth and District Gas Company was held on Feb. 10 at the Company's premises, Wandsworth.

Mr. Frank H. Jones, M.Inst.C.E. (Chairman and Managing Director), presided, and first referred to the loss which the Company had sustained through the death the previous night of Mr. R. M. Chart, who had been a member of the Board of the old Mitcham and Wimbledon Company and had joined the Wandsworth Company in 1912.

Continuing, he said that the proprietors would be aware that details and figures regarding the Company's operations during the past year must not be published or disclosed. Proprietors could be assured, however, that in view of the prevailing circumstances the results were as good as could be expected, and the Directors recommend the payment of a final dividend of 2%, making 4% for the year. The Company had carried out its obligations in the supply of gas in its very large area and had done so consistently throughout the year.

No doubt proprietors would be pleased to hear that Major Willis, one of the officers of the Company, had been decorated on the field with the D.S.O.

As regarded the working of the Company, the works and district had been properly maintained and, subject to certain restrictions, they were carrying on. They had brought a lot of women into the Company, both in the office and in the works. The office had gone on well, and thanks were due to the whole of the staff for their efficient and untiring work during the year.

The payment of the dividends was approved.

The Chairman proposed a vote of thanks to the staff, and said that he had never had one day, one hour, or one minute's worry about the Company, bad as things had sometimes looked. He wanted the proprietors to appreciate that everybody in the Company had done their jobs and they could not have been done better.

Mr. G. F. Page, J.P., seconded the vote and it was unanimously approved. A vote of thanks to the Chairman and Directors concluded the meeting.

With a Favourable Balance for the year, it has been decided by Dunbar Town Council to reduce the price of gas from 5s. to 4s. 7d. per 1,000 cu.ft., as from the next reading of meters.

The fact that goods made of raw materials in short supply owing to war conditions are advertised in the "Journal" should not be taken as an indication that they are necessarily available for export.

Gas Products Prices

The London Market Feb. 16.

There is very little movement in the prices of Coal Tar Products, as many of the usual markets are no longer available and pitch/creosote mixture as a fuel oil has taken their place.

Pitch is still a nominal market, but for such quantities as are being sold the price ranges between about 45s. and 50s. per ton. Creosote is about 5d. to 6d. per gallon. With regard to refined tar the price for next season has not yet been definitely fixed and it is expected that this will come under a Direction to be issued by the Coal Tar Controller. Pure toluole remains 2s. 5d. per gallon under the Ministry of Supply Toluene No. 2 Order. Pure benzole is about 1s. 10d., 95/160 solvent naphtha is 2s. 5d. to 2s. 9d. and 90/160 pyridine remains about 13s. 6d. per gallon. All the above prices are *ex* Makers' Works. Naphthalene prices are unchanged and are in accordance with the Control of Tar Order 1941. The Order refers to maximum prices, and the figure for refined crystal naphthalene in 2-cwt. bags and 4-ton lots is £23 per ton delivered.

The Provinces Feb. 16.

The average prices of gas-works products during the week were: Pitch and Crude Tar,* Toluole, naked, North, 1s. 10d. (controlled by the Control of Toluene No. 2 Order, July 5, which fixes the maximum price at which this material may be sold). Coal tar, crude naphtha, in bulk, North, 11d. to 1s. Solvent naphtha, naked, North, 1s. 9d. to 1s. 10d. Heavy naphtha, North, 1s. 9d. to 1s. 10d. Creosote, *ex* works, in bulk, North, liquid and salty, 4¼d. to 4¾d.; Scotland, 4¼d. to 4¾d.; low gravity, 4¼d. to 4¾d. Fuel Grade, 4d. to 4¼d. Carbolic acid, 60's, 3s. 7½d. to 3s. 9d. Naphthalene, £15 to £20. Salts, drained, £6 to £6 10s.; whizzed 72°, £7 15s.; 78°, £9 5s. Anthracene prices fixed by Controller. Heavy oil: Unfiltered anthracene oil (min. gr. 1,080), 6d. to 6½d.; filtered heavy oil (min. gr. 1,080)' 6½d. to 7d.; heavy anthracene oil gr. less than 1,080, 5¾d. to 6d.

*In regard to pitch and crude tar prices we would ask readers to refer to the editorial note on p. 396 of the "JOURNAL" for Sept. 10, 1941.

Tar Products in Scotland

GLASGOW, Feb. 14.

Demand continues strong. Refined tar 4¾d. to 5d. home, and 4¼d. to 4½d. per gallon export. Creosote oil: Specification oil, 6d. to 6½d.; low gravity, 6¾d. to 7¼d.; neutral oil, 6½d. to 6¾d. per gallon; all *ex* Works in bulk. Cresylic acid firm. Pale 99/100%, 4s. 9d. to 5s. 3d.; Pale 97/99%, 4s. 3d. to 4s. 9d.; Dark 97/99%, 4s. to 4s. 3d. per gallon; all *ex* Works in buyers' packages. Crude naphtha, 6½d. to 7d. Solvent naphtha: 90/160 grade 2s. to 2s. 3d. and 90/190 Heavy Naphtha 1s. 9d. to 2s. per gallon. Pyridines, 90/160 grade 13s. and 90/140 grade 15s. per gallon.

Gas Stocks and Shares

Business in Gas stocks and shares continued on a small scale last week, but with one exception all price movements were in an upward direction. Supplies are still very short, especially of the fixed-interest variety, and recorded transactions were practically confined to the stocks of a few leading undertakings. Nearly all the Gas Light stocks were marked up, the units closing 6d. higher at 14s. 6d., and Brighton consolidated was also a strong feature. The only fall was that of Imperial Continental which changed hands down to 55. It will be noted that a number of stocks were marked *ex div.* during the week.

The following price changes took place during the week:

OFFICIAL LIST

Associated Gas & Water 4½ p.c. Red. Cum. Pref.	15/—17/-	+1/-
Brighton, Hove & Worthing 5 p.c. Cn.	65—70	+5
East Surrey "B" (*x.d.*)	65—70	Feb. 9
Gas Light Units	14/—15/-	+-/6d.
Ditto 3¼ p.c. max.	48—53	+3
Ditto 4 p.c. Pref.	67—72	+2
Ditto 3¼ p.c. Red. Pref.	72—77	+5
Ditto 3¼ p.c. Red. Deb.	84—89	+1
Imperial Continental	55—60	—4
Portsmouth Cons (*x.d.*)	87—92	Feb. 9
South-Eastern Gas Corporation 4½ p.c. Pref.	15/6—17/6	+1/-
South Metropolitan Ord.	48—53	+1
Ditto 3 p.c. Deb.	72—77	+2
South Suburban Ord. (*x.d.*)	70—75	Feb. 9
Ditto 5 p.c. Pref. (*x.d.*)	84—89	"
Ditto 4 p.c. Pref. (*x.d.*)	68—73	"
Ditto 3¼ p.c. Red. Pref. (*x.d.*)	80—85	"

OFFICIAL LIST—*continued.*

Ditto 5 p.c. Deb.	100—105	+2
Southampton Ord. (*x.d.*)	63—68	Feb. 9
Swansea 5¼ p.c. Red. Pref. (*x.d.*)	88—93	"
Tottenham Ord. (*x.d.*)	80—85	"
Ditto 5 p.c. Pref. *x.d.*)	82—87	"
Watford Ord.	87—92	+2

SUPPLEMENTARY LIST

Cambridge Cons. "B" (*x.d.*)	105—110	Feb. 9
East Surrey 5½ p.c. Pref. "A" (*x.d.*)	85—90	"
Ditto 6 p.c. Cum. Pref. (*x.d.*)	90—100	"

PROVINCIAL EXCHANGES

Chester Ord. (*x.d.*)	95—98	Feb. 2
Newcastle Units (*x.d.*)	18/6—19/-	Feb 9
Preston "A" (*x.d.*)	150—160	"
Ditto "B" (*x.d.*)	110—120	"

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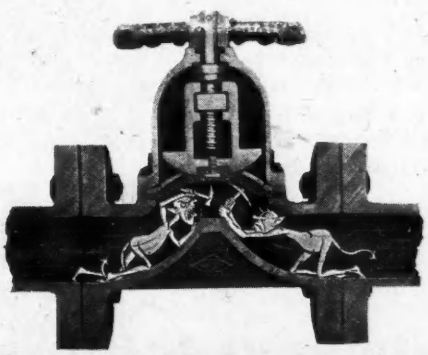

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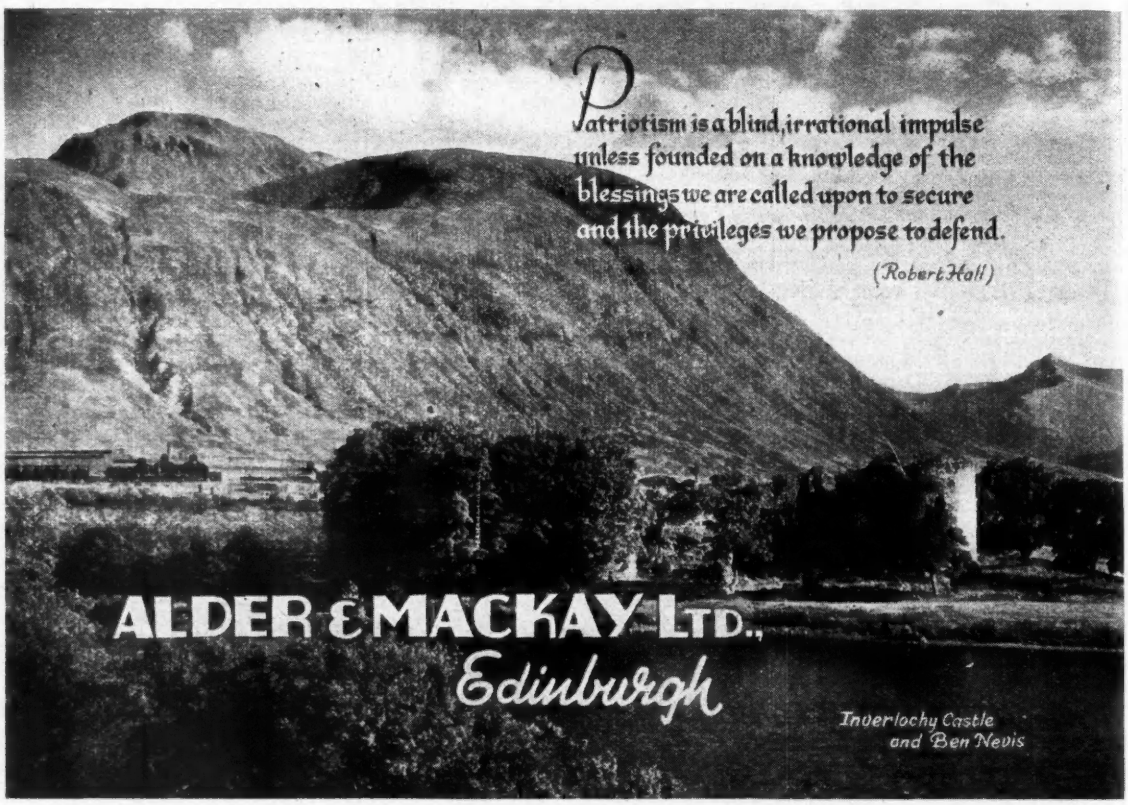
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● **The illustration shows a "Visco" suction type textile sleeve Dust Collector at a large Colliery.**

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The ducting enters the Collector between the batteries of sleeves and is graduated internally to distribute the dust into both sections of the hopper, which is bifurcated and fitted with chain-operated slide valves arranged to deliver the dust to wagons below. Internal walkways are incorporated for access to the sleeves and shaking gear.

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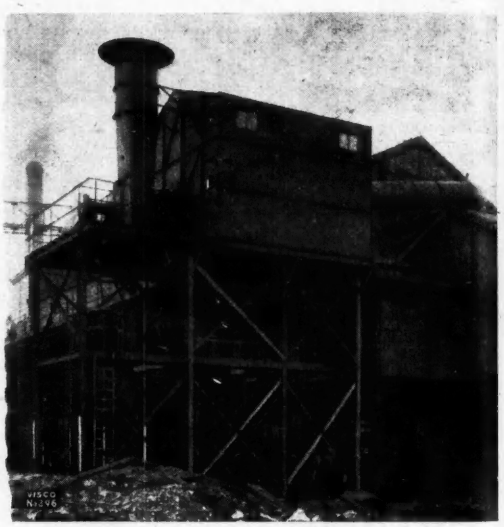

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GAS FIRED BRIGHT ANNEALING BY BIRLEC

The furnace shown above is installed in a large Midlands rolling mill.

The installation comprises four hearths on which the charges (consisting of coiled steel strip and sheet) are laid. The charging space for each hearth is approximately 6′ x 2′ x 2′ 6″.

Each hearth is provided with a gas tight removable cover which encloses the charge, and in which an artificial atmosphere is established in order to prevent oxidation of the material being annealed. A movable heating chamber can be lowered over any one of the hearths.

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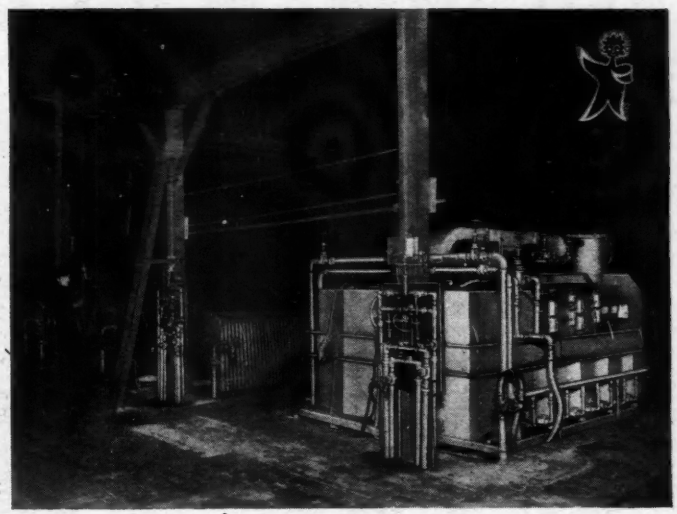

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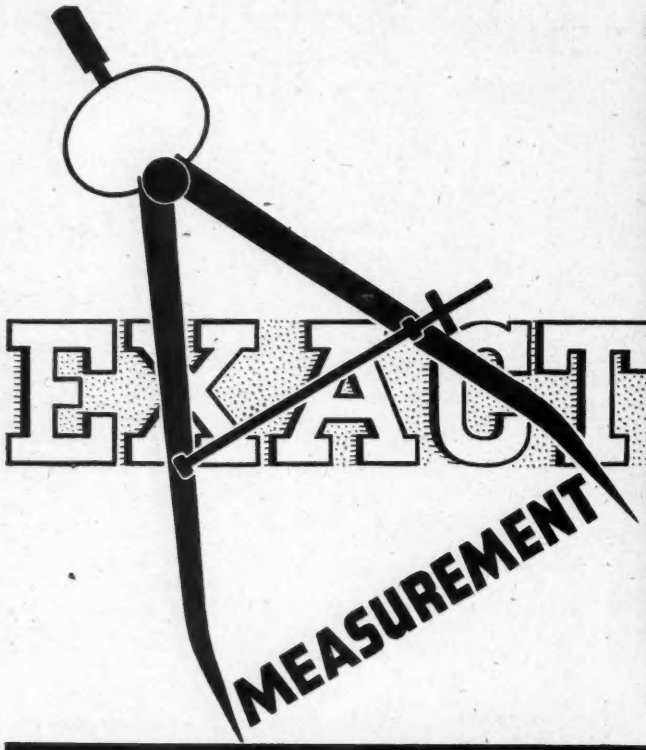

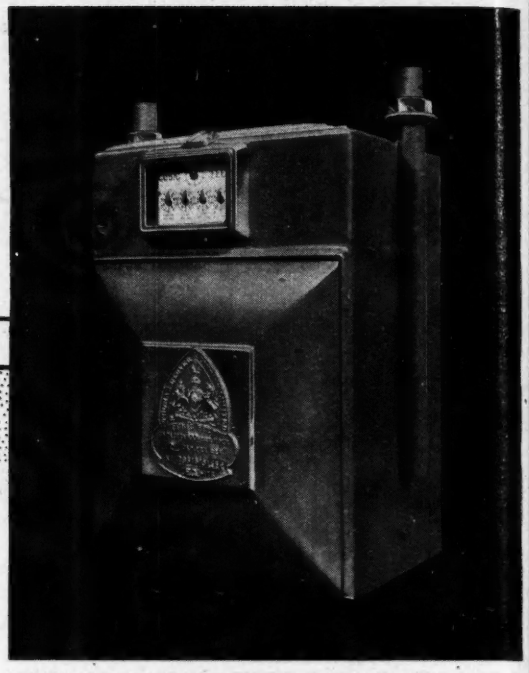

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